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International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : F28D 19/04 — A1

(11) International Publication Number: WO 96/24813

(43) International Publication Date: 15 August 1996 (15.08.96)

(21) International Application Number: PCT/SE96/00157

(22) International Filing Date: 9 February 1996 (09.02.96)

(30) Priority Data:
9500477-6 10 February 1995 (10.02.95) SE

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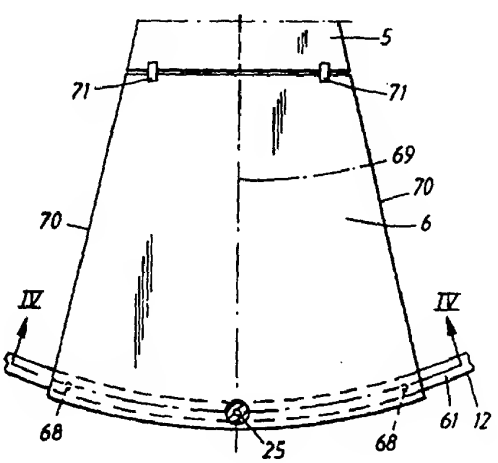
(81) Designated States: PL, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published
With international search report.

(54) Title: ROTARY REGENERATIVE HEAT EXCHANGER AND A METHOD FOR OPERATING A ROTARY REGENERATIVE HEAT EXCHANGER

(57) Abstract

In a rotary regenerative heat exchanger of the kind having a rotor mounted in a casing, supports are provided for maintaining a certain clearance between the rotor and movable sector plates (6) connected to the casing and located closed to the rotor ends. Each support co-operates through a front surface on a sliding shoe (25) with an end surface (61) on a flange (12) on the rotor. Each support is provided with gas conduit means ending in the gas outlet means in the front surface and being connected to a gas source of a pressure sufficient to establish a gap between the front surface and the end surface (61) so that a cushion of gas is established between the surfaces as the gas escapes from the gas outlet means through the gap. According to the invention a sector plate (6) is provided with only one single gas cushion support located in the region of the symmetry line (69) of the plate (6), and at the outer corners of the plate (6) axially directed stabilizing projections (68) are provided, which face the end surface (61) of the flange (12). These supports (68) prevent tilting of the plate (6) as only one single gas cushion support is provided.



Claims:

1. Rotary regenerative heat exchanger having a substantially cylindrical rotor (2) mount in a casing (1), which rotor (2) at at least one of its ends is provided with a circumferentially continuous external end surface (61), and which casing (1) is provided with plates (5, 6, 7, 8 at at least one of said rotor ends in an orientation substantially perpendicular to the axis of sa rotor (2) and closed to the related rotor end, said plates (5, 6, 7, 8) including movable sector plates (6, 8), each said sector plate (6, 8) being affected by a resultant axial force towards th related rotor end and being provided with support means (10) for maintaining a certain clearance between said sector plates (6, 8) and the related rotor end, said support means (10) including gas cushion means (25), each said gas cushion means (25) having a front surface (6 facing said end surface (61), said front surface (62) having gas outlet means (67), said gas outlet means communicating through gas conduit means (63, 65, 66) with a pressurized gas source (64) of a pressure sufficient to establish a gap between said front surface (62) and said end surface (61) against the action of said axial force, thereby creating a gas cushion between said front surface (62) and said end surface (61) as said gas escapes from said gas outlet mear (67) through said gap, characterized in that the support means (10) of at least one of said sector plates (6, 8) consists of one single gas cushion means (25), and said sector plate (6, 8) further is provided with at least one axially extending stabilizing projection (68) facing said en surface (61).

2. Rotary regenerative heat exchanger according to claim 1, wherein said single gas cushion means (25) is located in the region of a radial symmetry line (69) in the plane of said sector plate (6, 8) in the radially outer part thereof and said sector plate (6, 8) has one said stabilizing projection (68) on each side of said symmetry line (69), each one located adjacent t a radial edge (70) of said sector plate (6, 8).

3. Rotary regenerative heat exchanger according to claim 1, wherein said single gas cushion means (25) is located on one side of a radial symmetry line (69) in the plane of said sector plate (6, 8) in the radially outer part thereof and said sector plate (6, 8) has one single stabilizing projection (68) on the other side of said symmetry line (69) adjacent to a radial edg (70) of said sector plate (6, 8).

4. Rotary regenerative heat exchanger according to any of claims 1 to 3, wherein each said stabilizing projection (68) has an axial extension that is slightly shorter than the distance (S) between said sector plate (6, 8) and the related end surface (61).

5. Rotary regenerative heat exchanger according to any of claims 1 to 3, wherein each said stabilizing projection (68) is axially resilient.

6. A method for operating a rotary regenerative heat exchanger to maintain a certain clearance between one end of a substantially cylindrical rotor (2) of the heat exchanger and a movable sector plate (6, 8) located closed to said rotor end in an orientation substantially perpendicular to the axis of said rotor (2), said rotor end having a circumferentially continuous end surface (61), said rotor (2) being mounted in a casing (1) and said sector plate (6, 8) being connected to said casing and being affected by a resultant axial force towards said rotor end, said clearance being maintained by supplying gas to support means (10) on said sector plate (6, 8) said support means (10) including gas cushion means (25) having a front surface (62) with gas outlet means (67) and facing said end surface (61), the pressure o said supplied gas being sufficient to establish a gap between said front surface (62) and said end surface (61) against the action of said axial force, thereby creating a gas cushion between said front surface (62) and said end surface (61) as said gas escapes from said gas outlet means (67) through said gap, characterized by supplying said gas to one single support means (10) and providing at least one axially extending stabilizing projection (68) on said sector plate (6, 8), which projection faces said end surface (61).